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MULTI-YEAR PROCUREMENT:
ITS IMPACT ON THE SUBCONTRACTOR LEVEL

by

James C. Madrid

December 1982

Thesis Advisor: J. Bergquist

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Multi-Year Procurement: Its Impact on the Subcontractor Level

by

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Lieutenant Commander, Supply Corps, United States Navy
B.A., New Mexico Highlands University, 1970

Submitted in partial fulfillment of the
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The impact of implementation of multi-year procurement provisions in major defense acquisitions, at the subcontractor level, is the focus of this thesis. The opinions of subcontractors as to their perceptions of the flowdown of benefits, as a result of this implementation, were investigated. This was accomplished by means of a questionnaire sent to 47 major subcontractors involved in the Air Force's F-16 program and the Navy's C-2 COD program. The results of the survey show that subcontractors felt that: 1) overall multi-year procurement had a favorable impact on their firms; 2) the area of greatest savings was in purchasing EOQ quantities of raw materials, in advance, at now year prices; 3) multi-year procurement usually resulted in increased program stability and increased cost reductions; 4) the surge capacity of industry would be increased and the time required to surge from peacetime to wartime production would decrease; but 5) that more training is needed both in industry and DOD pertaining to the fundamentals required in executing a multi-year contract. Recommendations are made concerning methods for improving the application and implementation of multi-year procurement at the subcontractor level.

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I. INTRODUCTION

A. STATEMENT OF THE PROBLEM

> A Multi-year contract is a contract for the purchase of property or services for more than one, but not more than five, program years. Such a contract during the second and subsequent years of the contract is contingent upon the appropriation of funds and may provide for a cancellation payment to be made to the contractor, if appropriations are not made" [Ref. 1].

The above definition is included in the fiscal year 1982 appropriations bill, Senate bill S815, and provides a basic description of what multi-year contracting is all about. Although considered by some to be the answer to all DOD's procurement problems, multi-year contracting is not being widely utilized [Ref. 2:10]. As of June 1982, the Air Force had two major programs under Multi-Year Procurement (MYP), and the Navy had one, although both services have used MYP for smaller buys of ancillary systems and spare parts purchases. This situation exists in spite of the volumes of testimony both by industry and the military extolling its benefits and urging its acceptance. One major industry group, the Electronic Industries Association, (EIA), has gone on record stating that, multi-year contracting is not being utilized effectively, and the government and industry have been reluctant to use MYP for primarily three reasons:

1. Lack of understanding of its advantages.
2. The restrictions associated with regulations.
3. High degree of risk which can be associated with multi-year contracts [Ref. 2:12].

It seems that the death knell for MYP has been sounded, however, the opposite is in fact the case. Current opinion holds that the advantages of MYP far outweigh the disadvantages, and despite the lack of understanding of MYP in

industry and government, its future seems inevitable. As panel after panel, and committee after committee, hold hearings and receive testimony on MYP, its increased usage has arrived. Although MYP has been around for a long time, it has not previously received the favorable press, nor been so widely touted as the cure all for many of the problems concerning cost reduction and increasing productivity which face both industry and government. As a result, MYP is being re-examined by both as a vehicle to provide the economies of scale necessary to induce total program reductions and increased productivity through capital investment [Ref. 3:30].

To date, all of the concern, testimony, and most of the spotlight has been centered on the prime contractors or the very large corporations which constitute the majority of DOD's business. Very little has been written regarding the plight of the subcontractors, who in some cases provide upwards of 50% of the material or sub-assemblies required in some major system acquisitions. Although hearings have been held regarding the deterioration of the defense industrial base, very little has been heard on how the application of MYP will impact the subcontractors and to what extent the conceptual benefits of MYP accrued by the prime will be passed to the subcontractors.

This author's research indicates that no assessment of the impact of MYP on the subcontractor level has been undertaken since 1967, when the Logistics Management Institute, under contract to DOD, undertook a study of the possibilities of achieving economies by the use of MYP in subcontracts [Ref. 4]. As a result, the need exists to examine the extent to which the proposed benefits derived from MYP have in fact reached the subcontractor, especially in light of the fact that MYP seems to be the newest rising star on the procurement horizon.

B. RESEARCH OBJECTIVE

The objective of this research is to quantify the extent to which subcontractors have, to date, gained any benefits from MYP. Have the benefits which are to accrue to the prime being passed on to the subcontractors involved? Additionally, a secondary objective is to provide useful guidelines in deciding what actions may be taken to ensure that the subcontractors do in fact receive their share of the pie, and a share of the benefits commensurate with the risks involved.

Two programs were utilized in the research, the Air Force's F-16 program and the Navy's C-2 (COD) program. This provides the opportunity to gain a perspective, both from a major systems acquisition point of view, and also from the perspective of two different services. The F-16 program has been in existence for several years and has produced nearly 900 aircraft. The program is in the production and deployment phases with uncertainty and risk rather low. The F-16 System Program Office has an approved multi-year contract and has a proven track record in the MYP arena. On the other hand, the Navy's C-2 program has been involved in many postponements and restarts and has just recently been approved by Congress as a viable multi-year program. The C-2 program has subsequently received the necessary funding to proceed as a viable multi-year procurement. This provides the opportunity to create a data base from two contrasting situations, comprising two very different contracting styles. The prime contractors involved are General Dynamics Corporation of Fort Worth, Texas, and Grumman Aerospace Corporation of Bethpage, New York. Both prime contractors were contacted and briefed on the objective and methodology to be utilized in the project, and both approved and consented to having their subcontractors queried on the subject.

C. METHODOLOGY

The primary method used in gathering the data and opinions of the subcontractors involved was a survey questionnaire which consisted of a total of thirty-five questions. The questionnaire was divided into two parts, with sections one and two in the first half, and section three comprising the second half. Sections one and two were concerned with ascertaining the demography of the firm and the individual answering the questions. The answers to the first two sections were obtained telephonically. The second half of the questionnaire, consisting of section three, was mailed to each subcontractor for the purpose of careful examination and to provide ample time for thought and discussion. This section consisted of having the subcontractor compare the cost impact of MYP to annual funding and contracting. The questionnaire was based on a survey utilized by Air Force Captains Steve Berjans and Larry Elbroch, in their thesis project which concentrated on large prime contractors. The questionnaire was modified to apply to the subcontractor level and to assess the impact of MYP which has flowed down from the prime. A copy of the questionnaire is included as Appendix A.

D. RESEARCH QUESTION

Given the research objectives previously stated, the following primary research question was posed: Have the conceptual benefits of multi-year procurement accrued by prime contractors, been passed on to the subcontractor level?

The following ancillary research questions are deemed pertinent in addressing the basic research question:

1. What is multi-year procurement?
2. What is its history and background?

3. What are the current problems facing subcontractors?
4. Is multi-year contracting the solution?
5. How can multi-year contracting better be applied to subcontractors?

II. BACKGROUND OF MULTI-YEAR PROCUREMENT

A. HISTORY OF MULTI-YEAR PROCUREMENT

The concept of contracting for goods and services for more than one year at a time has been around for a number of years. Multi-year procurement concepts over the years have also been supported by a number of high level government officials and influential members of the industrial community. The advantages and risks of MYP have been delineated and debated from the corporate board room to the halls of Congress. For some time now there has been a growing concern, among both government and industrial leaders, about the continuing deterioration of the country's defense industrial base [Ref. 5]. As stated by the Report of the Defense Science Board 1980 Summer Study Panel on Industrial Responsiveness, ".....the ability of industry to respond to defense needs has deteriorated and costs continue to increase. Other findings are that the instability in programs has often made defense business less attractive to industry than commercial work, and many disincentives exist which discourage the capital investments needed to reduce costs, improve productivity and enhance industrial responsiveness" [Ref. 6:18]. These concerns have generally manifested themselves in comments directed at improving current procurement practices.

The idea of making appropriations available until expended was utilized as early as the 1950's in the DOD Appropriations Act of 1955 (P.L. 83-458), which made specified appropriations available on a multi-year basis [Ref. 2]. This demonstrated Congress' recognition that a multi-year funding approach can result in savings. Both the

Executive and Legislative branches had from time to time, issued comments or made recommendations concerning multi-year procurement. The Investment Policy Study Group, established in 1976, acknowledged that multi-year contracting would encourage industry's willingness to invest in capital facilities and equipment to increase productivity [Ref. 2]. In 1978, both Deputy Secretary of Defense Charles Duncan and Comptroller General Elmer Staats issued letters to the services and Congress respectively urging the acceptance and utilization of multi-year contracting techniques. They also presented the conclusion that the advantages with multi-year far outweigh the disadvantages and its use should be expanded in order to reduce procurement costs [Ref. 7].

Comments supporting a more efficient and economical procurement method have emanated from Congress on a number of occasions and are exemplified by the House Armed Services Committee Report No. 95-1573 [Ref. 2]. The report cited DOD's failure to effectively control rising weapon system costs and the need to re-examine existing procurement procedures. Additionally, the Office of Federal Procurement Policy Uniform Procurement System Task Group on Acquisition, in August of 1980, recognized that multi-year authorization and appropriation can provide efficient and economical procurement of goods and services [Ref. 8:33]. As is evident from the preceding comments, the idea of improving procurement procedures, increasing capital investment and productivity, and reducing procurement costs, through the expanded application and utilization of multi-year contracting is not a new concept.

Even though the concept of MYP is not new, and its advantages have been well documented, the acquisition procedures in force today do not reflect an acceptance of its application. As stated by RADM Neil P. Ferraro, former

Assistant Commander for Contracts, Naval Air Systems Command, "The crux of the matter is that, current system acquisition policies are not encouraging defense contractors to control and reduce production and material costs or to invest in productivity improving capital equipment" [Ref. 9:1]. Only recently have the services identified MYP as one of those tools which, when selectively employed, may significantly reduce acquisition costs. A current initiative by Congress to expand the use of MYP is House Bill H.R. 745, which has been introduced to remove some of the statutory problems which have restricted its use, (e.g., $5M cancellation ceiling is removed, and such cancellation changes permitted to include recurring costs) and to emphasize congressional interest in this approach [Ref. 10]. However, the current status of H.R. 745 is one of discussion and debate and most probably will not lead to any positive action, at least not in the 97th Congress.

The views of DOD have been stated by Deputy Secretary of Defense Frank Carlucci, both in his memorandum on improving the acquisition process which contained his thirty-two initiatives, and in his policy memorandum on multi-year procurement. Mr. Carlucci reiterates DOD's continued commitment to the full funding policy, but allows case by case consideration of programs [Ref. 11]. Both the Air Force and the Navy have advanced significant initiatives toward expanding the use of MYP for major systems acquisition. For the Air Force, General Alton Slay, former Commander of the Air Force Systems Command, has for many years been a leading advocate of MYP. He has on numerous occasions enumerated the various advantages of multi-year contracting and has presented several Air Force programs which have enjoyed significant savings due to the application of MYP procedures [Ref. 12].

In spite of the general acceptance of the potential for cost savings and the numerous benefits which may accrue from the implementation of MYP, a number of concerns are present which must be considered. The following issues require careful consideration before any application of MYP is undertaken. These concerns were expressed by RADM Ferraro as follows:

1. The use of multi-year techniques will result in long production runs by a single contractor causing a loss of alternative sources (i.e., the competitive base).
2. The expanded use of MYP assumes the authorization of incremental funding.
3. Early on planning with the contractor is necessary to establish any budget profile aberration caused by the funding of recurring costs.
4. Techniques to identify and validate savings must be established.
5. Variable quantity pricing provisions may be necessary.
6. Escalation clauses are an obvious need.
7. Consideration of financing/progress payment provisions which relate to contractor willingness to finance costs under cancellation guarantees [Ref. 9].

These issues are also concerns voiced by industry. However, there is no doubt that, in general, the industrial community views MYP in a positive light. This viewpoint is summed up by the Defense Science Board in its 1980 Summer Study, which stated that:

> "The principal benefit of such longer-term contracting arrangements is to achieve economies of scale. With the greater assurance of a solid program, contractors have a much greater incentive to invest in productivity measures and to make economical buys from vendors and subcontractors. The savings potential for multi-year contracting is estimated to be from 10 to 15 percent (in constant dollars). This is based on recent studies, but it reflects the experience of the late 1960's and the early 1970's when multi-year contracting was used fairly extensively. An indi-

> rect benefit of the multi-year approach is that it provides a surge potential in the second year and beyond because the materials and supplies are there if you have to surge" [Ref. 6:33].

As stated earlier, Electronics Industries Association strongly supports the expanded use of MYP, and they also note that,"....multi-year contracting has been constrained by the absence of a complimentary multi-year funding process" [Ref. 2].

Other industry leaders have voiced support for MYP and its expanded use. For example, Hughes Aircraft Corporation has developed a package of legal issues and required legislative/regulatory changes which they feel are necessary to facilitate the implementation of MYP [Ref. 13]. The Northrop Corporation is another supporter of MYP, and the faith they hold in the expanded use of MYP is evidenced in their effort to underwrite the risks involved in their multi-year contract for the B-52 AN/ALQ-155 power management system. "The cost savings attributed to the use of MYP are documented at $10.6 million, primarily as a result of economical purchases of material and efficient application of labor" [Ref. 14:19].

As can be seen by the preceding comments, Congress, DOD, and industry stand committed to the advent of the increased use of MYP. However, certain actions and issues must be addressed and resolved prior to its full implementation. First, legislation must be passed to increase the cancellation ceiling applicable to MYP contracts, and recurring costs must be included in the cancellation ceiling. These two points are the critical requirements for advantageous use of MYP in major systems acquisition [Ref. 15]. These two issues are contained in every reference by industry to the use of MYP. In addition, certain basic requirements must be met by each program before it can be considered a viable candidate for MYP. These basic requirements are

common threads which run through every major discussion of multi-year contracting:

1. The program must be mature and stable.
2. The product must be non-controversial.
3. Stable funding must be available for the present and the future.
4. Cost confidence must be very high.

These requirements must be present and they must be permanent. It is the general opinion of all the players involved that multi-year procurement holds tremendous potential for improving the procurement process. The trick will be for all of them to agree on how and when.

B. ADVANTAGES AND DISADVANTAGES OF MYP

A key issue in determining whether or not MYP is more advantageous than annual contracting is the way in which DOD has historically funded production contracts. Since the early 1960's DOD has utilized a concept called the "full funding policy", which was mentioned earlier. This policy was reaffirmed by Secretary Carlucci and is stated in DOD Directive 7200.4, which states in part:

> "The objective is to provide funds at the outset for the total estimated cost of a given item so that the Congress and the public can clearly see and have a complete knowledge of the full dimensions and cost when it is first presented for an appropriation. In practice, it means that each annual appropriation request must contain the funds estimated to be required to cover the total cost to be incurred in completing delivery of a given quantity of usable end items, such as aircraft, missiles, ships, vehicles, ammunition, and all other items of equipment" [Ref. 16].

This policy means that all of the funds required for a given equipment purchase must be appropriated in the year that the contract is initiated. As a result, DOD is prohibited from buying production equipment by paying for it as costs are

incurred as it does in the case of research and development contracts. This policy was adopted by DOD at the urging of Congress and OMB, to preclude situations where production programs were started without sufficient funding to complete the end items ordered, leaving subsequent Congresses and administrations the requirement to budget funds to complete the project or accept only partially completed items of equipment [Ref. 5].

The reason for addressing the full funding issue at this point is that it is the conceptual undermining of the intent of the DAR definition of multi-year contracting which states that MYP, "is a method of acquiring DOD planned requirements for up to a five year period (four years in the case of maintenance and operation of family housing), without having total funds available at the time of award" [Ref. 17]. The key phrase is, "without having total funds available at time of award." This last statement is the heart of MYP, and is for all intents and purposes nullified by the full funding policy.

Finally, it should be noted that DOD Directive 7200.4 also recognizes the need to buy some components which have extremely long lead times ahead of the procurement for the end item itself [Ref. 16]. This is called "advanced procurement". DOD and Congress have to date both taken a very conservative view of this procedure and have limited its use as a result.

These two limitations have acted together to effectively prohibit the use of MYP for the acquisition of major weapons systems, and as a result, have provoked the concern of many defense planners who see MYP as a positive step in cost savings and increased productivity.

These constraints were addressed at this point to emphasize the uphill battle which MYP has encountered to date, in spite of the many advantages and potential benefits its

expanded use may realize. MYP's conceptual advantages are in direct opposition to the two issues addressed above, which is partial explanation of its limited use.

As a result, a thorough examination of MYP's advantages and disadvantages is crucial in any analysis of its design. As in any analysis, advantages and disadvantages depend on one's point of view. For example, what a contractor thinks is an advantage may or may not be considered advantageous by DOD or Congress. The opposite is equally true. Therefore, any discussion of this subject must be general in nature, and treat the issue of MYP as though there were no barriers to its use.

To start with, DAR implies the following advantages:

1. Lower costs.
2. Enhancement of standardization.
3. Reduction of administrative burden in the placement and administration of contracts.
4. Substantial continuity of production of performance, thus avoiding annual startup costs, preproduction testing costs, make-ready expenses, and phaseout costs.
5. Stabilization of work forces.
6. Avoidance of the need for establishing and "proving out" quality control techniques and procedures for a new contract each year.
7. Broadening the competitive base with opportunity for participation by firms not otherwise willing or able to compete for lesser quantities, particularly in cases involving high startup costs.
8. Implementation of the Industrial Preparedness Program for planned items with planned producers.
9. Provide incentives to contractors to improve productivity through investment in capital facilities, equipment and advanced technology [Ref. 17].

In addition, the Department of Defense 1982 Appropriations Bill Report of the Committee on Appropriations states:

> "Multiyear contracting (MYC) is a management device that has potential for saving money and for improving the defense industrial base. The following sources have been cited for achieving lower unit costs compared to annual contracting: 1) improved economies and efficiencies in the production process, 2) economy of scale lot buying, 3) decreased financial costs of borrowing, 4) better utilization of industrial facilities, and 5) reduction in the burden of placing and administering contracts. MYC also offers opportunities to enhance the industrial base through the often intangible benefits of firm long term planning. It clearly offers opportunities to shore up the defense industrial base by attracting subcontractors, vendors, and small suppliers, who under current procurement practices are leaving the defense field" [Ref. 18].

Commander Marv McWherter, Policy Development/Special Projects office, Contracts and Business Management, Naval Material Command, states in his presentation on MYP the following advantages:

1. Reduction of Costs
   a) Long term production
   b) Contractor investment in labor saving equipment
   c) Increased competition at the subcontractor level
   d) Procurement of material in economic lots
   e) Enhanced standardization
   f) Stabilization of contractor work force
   g) Administrative cost reductions
2. Permit out year budgets to be based on negotiated contract prices vice cost estimates.
3. Preservation of the Defense Industrial Base.
4. Opportunity to shorten acquisition cycle [Ref. 19].

Other advantages not addressed, but postulated by both industry and DOD are; improved surge capability as a result of advanced procurement of material in EOQ quantities, program stability for both the project office and the prime contractor involved, increased price competition both at the

prime and subcontractor level, lessening of the impact of inflation because of the advanced purchase of raw materials at fixed prices, and lastly, improved leverage for primes over second and third tier vendors for better competitive pricing and more economical production runs. As is evident, the advantages associated with MYP are in the eyes of the beholder, and depend on the viewpoint of the individual or organization holding the microphone. One thing is for certain, if MYP is selectively applied the potential for cost saving and increased competition is enormous.

Having presented all of the above, it is important to point out that there are some disadvantages associated with MYP.

As presented by RADM Ferraro, the following are perceived as disadvantages:

1. Possible program funding shifts burdening earlier years to cover recurring (e.g., material) costs decisions, precluding use of such early funds for other program priorities, given fixed fiscal guidance.
2. Desire for increased quantity flexibility over future year requirements due to uncertainty regarding out-year requirements and budget priorities.
3. Possible lack of incentive for contractor cooperation in a sole source environment.
4. The difficulty which is present because of a need for an early decision in the PPBS process, which is required in order to permit the presentation of a proper funding profile.
5. Need to structure better escalation provisions.
6. Difficulties in validating savings.
7. Discouragement of early investments in recurring costs due to high interest rates (i.e., assumes contractor carries government to some extent).

8. Possible early economical procurement of items with near term obsolescence potential.
9. Potential loss of a competitive base [Ref. 9].

Additionally, the first disadvantage usually cited by Congressional critics is that MYP will result in a loss of flexibility to all concerned, primarily because larger portions of the DOD budget will be "uncontrollable" or predetermined by previous years commitments [Ref. 20:25]. This is the other side of the coin to the increase in stability which means as stability increases, flexibility decreases.

Another disadvantage noted by critics of MYP is that contracts used under these procedures are either FFP, or FFP with an Economic Price Adjustment (EPA) clause attached. This forces the contractor and the government to estimate prices and negotiate a firm price for a production run which could run for 3 to five years. This long lead prediction requirement forces both parties to be extremely cautious in those predictions.

The following quote summarizes the key to whether or not any benefit is realized from the application of MYP:

> "....It is important to establish that failure to conclude a MYC or delays in its conclusion cannot result in a windfall of funds available to the DOD for other purposes. The second purpose is to ensure that deficit reduction and other budget pressures do not impinge on the long range commitments made under the MYC. MYC commitments must be insulated from the annual scramble for budget year funds, because the savings from MYC do not occur till the last stages of the contract. This statement is crucial to the success or the failure of MYP. Once initiated, a multi-year contract must be allowed to function until its completion is achieved or all of the advantages will be lost and the concerns realized" [Ref. 18].

C. SELECTION CRITERIA

In the final analysis, management judgement is critical in deciding to use or not to use MYP for a particular acquisition. Deputy Secretary Carlucci issued a list of criteria in his memorandum concerning MYP policy in the Department of Defense. The criteria are to be considered in the context of a benefit/risk analysis format. The following criteria were established as guidelines for management in DOD:

1. Benefit to the Government - A multiyear procurement should yield substantial cost avoidance or other benefits when compared to conventional annual contracting methods. MYP structures with greater risk to the Government should demonstrate increased cost avoidance or other benefits over those with lower risk. Savings can be defined as significant either in terms of dollars or percentage of total cost.

2. Stability of Requirement - The minimum need (e.g., inventory or acquisition objective) for the production item or service is expected to remain unchanged or vary only slightly during the contemplated contract period in terms of production rate, fiscal year phasing, and total quantities.

3. Stability of Funding - There should be a reasonable expectation that the program is likely to be funded at the required level throughout the contract period.

4. Stable Configuration - The item should be technically mature, have completed RDT&E (including development testing or equivalent) with relatively few changes in item design anticipated and underlying technology should be stable. This does not mean that changes will not occur but that the estimated cost of such changes is not anticipated to drive total costs beyond the proposed funding profile.

5. Degree of Cost Confidence - There should be a reasonable assurance that cost estimates for both contract costs and anticipated cost avoidance are realistic. Estimates should be based on prior cost history for the same or similar items or proven cost estimating techniques.

6. Degree of Confidence in Contractor Capability - There should be confidence that the potential contractor(s) can perform adequately, both in terms of Government furnished items (material, data, etc.) and their firm's capabilities. Potential contractors need not necessarily have previously produced the item [Ref. 21].

Other criteria have also been addressed by RADM Ferraro when he stated that certain conditions must be present before application of any MYP contract:

1. Mature and stable production programs.
2. Non-controversial force level/requirement issues.
3. Significant savings identified.
4. Acceptable budget profile, particularly for front-end burden [Ref. 9].

The preceding comments effectively summarize the DOD point of view regarding selection criteria to be applied to candidates for MYP. Industry has similar criteria, but some differences are apparent. To summarize, the industrial community's priorities are presented by Mr. Harry Fromer, Program Manager for the C-2 COD aircraft for Grumman Aerospace Corporation, in his presentation on MYP which includes the following objectives of industry:

1. Establishing a firm long term business base, which includes the following:
   a) Ability to plan the factory
   b) Increased certainty in financial decision making
   c) Base to operate from in planning advanced technology re-investments
   d) Profit in hand at an earlier point in the program
2. Stabilization of the work force
   a) Long term hiring plans
   b) Level loading of shop
3. Elimination of yearly budget battle
   a) Devote energies to more productive tasks
   b) Reduced uncertainty
   c) Allows the defense segment of a company to compete for assets against non-defense elements [Ref. 22].

As can be seen, industry has a stake in which programs are selected for MYP and which ones are not. As is evidenced by

Mr. Edward Elko in his presentation "Multi-year Acquisition-Industry View", he states: "A Multi-year contract cannot make a bad program good; however, if misapplied, it can make a good program bad" [Ref. 23].

D. CURRENT STATUS OF MYP

As the preceding discussion indicates, there are many differing viewpoints toward MYP and numerous issues that remain to be resolved. There is little doubt that MYP holds tremendous potential for cost saving if judiciously applied, however, there are also risks involved. Currently, the only statutory authority for MYP is contained in the 1982 Department of Defense Authorization Act which included the following provisions: 1) MYP may be used for major systems acquisition, 2) advance procurements may be made to obtain economic lot prices, 3) cancellation ceilings may include both recurring and non-recurring costs, 4) notification to Congress is required for ceilings over $100 million. Additionally, as of the writing of this research paper, the current restrictions of the full funding policy still apply and the fate of House bill H.R. 745 is unclear. H.R. 745 was returned to the House Armed Services Committee with a recommendation of further review by designated sub-committees, which effectively means no action will be taken, at least for the 97th Congress.

In DOD, the services have been informed of which candidates have received approval for MYP application. The Navy has had four of eight candidates approved for FY 83 as viable MYP programs [Ref. 19]. They are the TAO fleet oiler, the MK-46 torpedo, the Marine Corp MULE laser program, and the NATO Seasparrow Orlalt kits. The C-2 COD aircraft was approved as a multi-year contract in FY 82, but funding was cancelled by the House Appropriations Committee

for FY 83. Subsequently the Senate reinstated the funding for FY 83 and informed sources feel the reinstatement will not be contested by the House [Ref. 24]. Also, all the services have forwarded to the Secretary of Defense their MYP candidates for FY 84.

The current attitude which exists toward MYP at this time is one of enthusiasm and anticipation on the part of DOD, and one of doubt and serious misgivings on the part of Congress, specifically the House Armed Services Committee. The main point of contention seems to be the fact that expanded use of MYP will reduce and decrease the amount of discretionary funds over which the committee can exercise its authority. More of the DOD budget will become "uncontrollable" and pre-determined. It remains to be seen whether MYP can weather the storm and realize its potential.

III. PRESENTATION OF THE SURVEY DATA

A. INTRODUCTION

As a result of changes in the complexity of weapons, and an unstable economic environment, both industry and Government have been looking for a better way of contracting for goods and services. Annual contracting as a method of procuring large, complex, and extremely expensive weapons systems, has proven to be part of the problem, rather than the solution. As stated by Robert A. Fuhrman, Lockheed's Board Chairman, "single-year contracting is the biggest single problem we see in the defense business" [Ref. 25:46 G-I]. Additionally, the full funding policy addressed earlier prohibits contracting for more end items than can be purchased with available funds. The law and official policy coupled with existing fiscal constraints and annual funding have effectively limited systems acquisition to annual procurement. As a result of the problems plaguing the acquisition process, and the many rules and regulations involved which have acted to limit contracting into a single year mode, many procurement people from all levels of industry and government have come out in favor of the expanded use of multi-year contracting. As discussed earlier, there are numerous advantages accorded to the implementation of MYP. Minimal research, however, has been accomplished which measures the impact of those benefits below the prime contractor level. A review of the literature confirms the fact that the majority of the research has been aimed at measuring the impact of MYP on prime contractors and large corporations involved in the defense market. Very little has been accomplished with regard to the

subcontractor level, and no effort has been undertaken in assessing the impact of MYP on subcontractors. In an attempt to fill part of this void, this survey of subcontractors was undertaken.

B. SURVEY BACKGROUND

This survey was intended to determine how some of the subcontractors involved in two major aircraft production programs feel MYP would affect the way they do business, and whether or not some of the benefits accrued by the prime as a result of MYP, have been passed on to the subcontractors involved. Subcontractors in the Air Force's F-16 program and the Navy's C-2 COD program were mailed section three of the survey, which asked them to compare two different situations. One situation utilizing annual contracting methods, and the other MYP contracting methods. Each company that responded was then contacted by phone and asked to respond to the questions in sections one and two which dealt with demographics of the individual, the firm and the conceptual benefits of MYP respectively.

A copy of the survey is contained in Appendix (A). The questionnaires were sent to forty-seven subcontractors involved in the two programs cited above. The names of the companies which were mailed surveys are listed in Appendix (B).

Because there are many subcontractors involved in enumerable programs sponsored by DOD, the size of the firm was not a factor in determining the recipients of the survey. In order to elicit the respondents' honest and candid responses, they were informed that all responses were non-attributable, and no means of determining the individuals company were included in the questionnaire. Since all the questions were quantifiable in nature, all responses were

analyzed by using a frequency distribution or an arithmetic average of the responses. Any opinions offered as amplifying data are included in the conclusions section of Chapter Five.

C. SURVEY RESPONSES

Of the forty-seven surveys mailed, thirty-one were returned or completed telephonically (a return rate of 66%). Due to the controversial nature of some of the questions, many respondents also provided opinions and personal experiences to explain their answers. These are included in the analysis whenever possible.

1. Demographic Data

The first eleven questions were developed to establish the background of the individual answering the questionnaire, and a profile of the company for which he/she works.

Question 1: Which answer below best describes your area of responsibilty in the firm

a. Materials Manager
b. Financial Management
c. Contract/Purchasing
d. Engineering/R & D
e. Program Manager
f. Marketing

Seventy-one percent of the respondents were in the area of Contracts/Purchasing, with twelve percent in Material, and twelve percent in Marketing. The majority of the firms contacted had no separate contracts department. The contracting function was almost always included within another department or was a division of a functional area. The head of contracts was almost always a middle manager vice executive.

To provide a base from which to determine the experience level of the respondents, each was asked to indicate the number of years in their present position, and the number of years they had been employed by their firm.

Those who had been in their present position five to twelve years constituted 51.6% of the responses, while those with from one to four years represented 29%. The results are shown in Table I.

TABLE I

Years in Present Position

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
<1 year	3	9.7	9.7
1-4 years	9	29.0	38.7
5-8 years	8	25.8	64.5
9-12 years	8	25.8	90.3
13-17 years	2	6.5	96.8
18-25 years	1	3.2	100
TOTAL	31	100	

In Table II, the results of question four are presented. The majority of the respondents had worked for their firm for over 15 years, with 32.3% being employed for over 25 years by the same firm.

TABLE II

Years Employed by Firm

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
<5 years	6	19.4	19.4
5-10 years	4	12.9	32.3
10-15 years	4	12.9	45.2
15-20 years	2	6.5	51.6
20-25 years	5	16.1	67.7
>25 years	10	32.3	100
TOTAL	31	100	

As is evidenced by the two tables presented, the experience level of the individuals answering the survey was on the average very high. The typical respondent had 18 years with his firm and 8 years in his present position. This is a very significant experience level from which to draw information concerning any type of contracting procedures.

Questions five and six dealt with whether or not the firm concerned had ever dealt with a prime contractor before who was involved in a major defense contract, and if so, for how many years. All of the respondents had dealt with a prime on a major defense contract previously, and on the average for over 15 years.

Question seven asked what percentage of the firms business was government or DOD related. A few companies regarded this as confidential information and as a result, were excluded entirely from the final analysis. However, 54.8% of the firms which did respond, experienced a 50 to 75 percent level of government or defense work, with an additional 16.1 percent having 75 to 100 percent government or DOD related business.

Question eight pertained to the individual's experience in being involved in the defense industry, or being employed by a firm that dealt with the Department of Defense. As was the case with questions three and four, the individual averaged over 20 years experience in the business.

Question 9 dealt with the activities which took up the most time of the respondents. This question was aimed at determining whether or not the government or the prime was occupying a majority of the time of employees directly involved in defense contracts. The activities which consumed the most time were meetings with prime contractor representatives, planning, and supervising. Table III summarizes the data.

The last two demographic questions asked whether the individual or the firm, at which he/she was currently employed, had ever dealt with a prime involved in a multi-year contract. The results were, 80% of the firms had been involved in a multi-year environment before, and 68% of the individuals had personally dealt with a multi-year contract before.

To draw a composite of the individual and the firm in which he/she was employed, the following characteristics would be present: The person would have on the average of 8 years experience in his present position, 18 years with his

TABLE III

Activities Which Consume the Most Time

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Supervising	7	22.6	22.6
Planning	13	41.9	64.5
Mting with Govt Reps	3	9.7	74.2
Mting with Prime Kr Reps	8	25.8	100
TOTAL	31	100	

present firm, be a middle manager in contracts or purchasing, employed in a firm with over 15 years of experience dealing in the defense industry, with 50% of its business defense related, and have had dealt in a multi-year contracting environment previously.

2. Conceptual Benefits of Multi-Year Procurement

Section two of the survey concerned the conceptual benefits related to multi-year procurement, and their potential impact on the individual firm. All of the questions were based on the following premise: Implementation of multi-year procurement at the prime contractor level will have the following impact on my firm. Each question had three possible responses; Agree, Disagree, or No Opinion, and all related to the perceived benefits of MYP.

All of the questions, except one, resulted in a substantial number of affirmative responses. Some percentages were higher than others, but overall, every respondent agreed that the benefits which would accrue to the prime would also favorably impact his firm.

Questions 12, 14, and 15 dealt with cost reduction potential in the areas of unit cost, contract administration, and direct labor.

Question 12: Will reduce average unit cost over the life of a program

Question 14: Will reduce contract administration costs

Question 15: Will result in reduced labor costs.

Question 12 enjoyed an 87.1% positive response rating, with questions 14 and 15 at 51.6 and 67.7% respectively. Most respondents felt that MYP would in fact reduce costs in these areas, with two caveats involved: 1) Finished goods would be shipped to the prime upon completion, and 2) No inventory would be accumulated. A majority of the firms felt that holding and inventory costs would adversely affect the impact of advance buys and economical production runs. This opinion was held primarily by the smaller subcontractors, who felt the prime should be responsible for storing and holding finished goods until they were needed. Table IV summarizes the data from these three questions.

Question 16 asked if an increase in productivity would result, and 80.6% of the respondents felt it would, with 12.9% disagreeing. The majority of the respondents felt that the stability created by being able to buy in EOQ quantities and the ability to plan long range and being able to keep the most economical production run functioning at peak efficiency were responsible for the increase in productivity.

TABLE IV

Cost Reduction Data

Response-Q12	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Disagree	2	6.5	6.5
No opinion	2	6.5	12.9
Agree	27	87.1	100
Response-Q14			
Disagree	7	22.6	22.6
No opinion	8	25.8	48.4
Agree	16	51.6	100
Response-Q15			
Disagree	8	25.8	25.8
No opinion	2	6.5	32.3
Agree	21	67.7	100

Questions 17 and 18 dealt with the question of workforce and manpower stabilization.

Question 17: Will stabilize your workforce.

Question 18: Will stabilize your production manpower loading requirements.

An average of 92% of the responses indicated that both areas would be stabilized as a result of MYP. This would occur primarily because of the ability to plan the factory and the potential of better long-range planning possibilities.

The only question concerning the conceptual benefits of MYP which received a rather mixed, luke warm reception was question number 20, which asked if MYP's implementation would result in the firm competing for more defense related

business. As shown in Table V, opinions were split between agree and disagree. The reason for this distribution most often encountered was that the firm already had all the defense business it wanted, i.e., a conscious corporate decision; the firm enjoyed the current percentage level of defense business; or the fact that it was hard to improve on a 90% or 95% level of DOD related business which the company currently enjoyed. Table V, presents in detail the breakdown of the data.

TABLE V

Would Compete for More Defense Business

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Disagree	10	32.3	32.3
No opinion	9	29.0	61.3
Agree	12	38.7	100
TOTAL	31	100	

The last two questions in this section dealt with the modernization of production capacity and capability, and whether or not the surge capability of production during an emergency situation would increase. Of the responses received, 54.8% felt that their firms would be willing to improve their production capacity as a result of MYP, with 29% disagreeing. In regard to surge capability, most people felt the it would increase, but that this would be a function of the amount of advanced buys financed by the prime, and not totally because of MYP.

Across the board, every respondent felt that the benefits accrued by the prime would, in one form or another, favorably impact his firm. This is evidence that most subcontractors in the aircraft industry perceive a trickle down effect of potential benefits from the prime as a result of implementation of MYP.

3. Situational Analysis

Section three of the questionnaire asked the respondent to compare two situations concerned with a lengthy production run and contract. Situation one consisted of a prime involved in a long-term production program with a particular service which had an estimated eight year life, with annual contracting procedures to be utilized for the remaining production years. This environment was to be compared to situation two, which was to be conducted under multi-year procedures with the following provisions: 1) a five year contract life, 2) the prime would be reimbursed for materials purchased for use up to two years in the future, 3) the cancellation ceiling had provisions to include non-recurring costs, and 4) the contract awarded to the prime was FPI (Fixed Price Incentive). The respondents were asked to compare situation two to situation one, and in their opinion estimate the percentage change for each cost involved which they think would result. This approach was taken in order to force the respondent to apply his perceptions of both annual and MYP to a specific situation, given only a few parameters. This section provided the most enthusiasm and controversy and was designed as the heart of the research effort. The fundamental goal of the author's research was to be able to compare the cost impact of two different contracting methods which were in practice today. As stated previously, MYP in order to succeed, must be able to show substantial cost savings in both material and labor.

A primary objective in today's economic environment is more bang for the buck. The ability to buy more with a fixed level of funding is the ultimate goal of the government contracting officer. The key to whether MYP lives, or dies, is going to be its ability to save money, reduce costs, and stretch the DOD procurement dollar. To this end, section three attempted to solicit the opinions of the various subcontractors involved.

The first five questions dealt with the percentage of cost increase or decrease in the production phase of the manufacturing process, and the impact on administration costs for the two methods being compared. The initial five questions contained the same possible responses as question 22, which is presented below.

Question 22: Direct labor cost per unit produced?

a. Greater than 30% increase
b. 20 to 30% increase
c. 5 to 15% increase
d. No change
e. 5 to 15% decrease
f. 20 to 30% decrease
g. Greater than 30% decrease

As can be seen, Question 22 asked whether or not Direct Labor costs per unit produced would decrease or increase over the life of the program. The majority of the respondents, (77.4%), felt that at least a 5 to 15 percent reduction would result. However, six contractors, or 19.3% felt that there would be no change or even an increase in labor costs. The reason most often given for the reduction was the length of the production run, and the resulting

stability created by a firm, long term commitment both by DOD and the prime.

Question 23 pertained to manufacturing overhead cost per unit produced. The results were a 71.0% response which stated a 5 to 15 percent decrease in overall costs would be achieved. All of the contractors who responded felt that overhead was the most difficult cost to pin down and therefore to accurately estimate. It is the one area in which the largest "grey" area exists. As a result, most said yes, a reduction would occur, but hedged as to the degree and picked 5 to 15% primarily because it was the lowest reduction response available.

Question 24 dealt with the area of contract administration costs. This was the only question which did not receive a positive majority. In fact, 64.5% stated there would be no change in the costs associated with the administration of an MYP contract, compared to the administration of an annual buy. The main reason given was the increased level of reporting required, and the fact that General and Administrative expenses are fairly fixed and would not be totally avoided no matter what the method utilized. Table VI summarizes the results of question 24.

Questions 25 and 26 dealt directly with the production aspects of the contract and were aimed at identifying the impact of MYP on the material and assembly costs incurred in association with the set-up and production line costs. As presented by Captain Berjans and Captain Elbroch, of the Air Force Institute of Technology (AFIT) at Wright-Patterson Air Force Base, in their thesis project, which concentrated on prime contractors, this particular area revealed where the most significant cost savings could be realized. One of the goals of this research was to ascertain if this same conclusion was in fact the case at

TABLE VI

Contract Administration Costs

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
5-15% increase	2	6.5	6.5
No change	20	64.5	71.0
5-15% decrease	6	19.4	90.3
20-30% decrease	1	3.2	93.5
<30% decrease	2	6.5	100
TOTAL	31	100	

the subcontractor level and to what extent, if any, MYP impacted the material aspect of the contract. As was the case with the AFIT thesis project, all but one of the subcontractors interviewed agreed that the most substantial savings would be realized in this area. However, in regard to set-up and production line costs, the degree to which MYP would be a factor was much less. Most felt that there would be little or no change in the costs of the initial set-up, and even less of a savings on the production line itself. The results of these two questions are presented in Table VII.

During the hearings on the capability of the defense industrial base, one of the main concerns addressed was the inability of first and second tier subcontractors to pick up production on short notice. The problem is aggravated by the fact that many subcontractors have left the defense market, or have reduced capacity in the face of an unstable economy [Ref. 5]. The president of Hughes Aircraft Company, in a letter to RADM Ferraro, noted that an increased surge capability is a significant positive factor of MYP, and the

TABLE VII

Material and Production Line Costs

Response-Q25	Absoulute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
5-15% increase	1	3.2	3.2
No change	1	3.2	6.5
5-15% decrease	27	87.1	93.5
20-30% cecrease	2	6.5	100
Response-Q26			
No change	12	38.7	38.7
5-15% decrease	15	48.4	87.1
20-30% decrease	3	9.7	96.8
<30% decrease	1	3.2	100

ability to rapidly enter into a surge or mobilization condition in the second year is enhanced [Ref. 13]. Questions 27 and 28 were developed to determine whether or not the surge capacity at the subcontractor level was in fact affected either positively or negatively, and whether or not the time involved to reach an increased production rate would be decreased. Question 27 asked whether the surge capacity would be increased. There was some uneasiness on the part of some respondents, primarily due to the fact that the increase in surge capability would be directly proportional to the amount of advance buys possible, and the amount of long lead items on hand at the time. The responses ranged from greater than a 30% increase to a greater than a 30% decrease, with the majority in the 5 to 15% increase range. On the other hand, the responses to Question 28 reveal that the respondents were a bit more positive that the time aspect would be reduced. The majority of the respondents felt that a 10 to 20% decrease in the time required to surge

from a peacetime to a wartime production rate would result. The results to questions 27 and 28 are presented in Table VIII.

TABLE VIII

Increased Surge Capacity and Production Rate

Response-Q27	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
>30% increase	2	6.5	6.5
20-30% increase	2	6.5	12.9
5-15% increase	17	54.8	67.7
No change	6	19.4	87.1
5-15% decrease	3	9.7	96.8
>30% decrease	1	3.2	100
Response-Q28			
10-15% decrease	18	58.1	58.1
15-20% decrease	5	16.1	74.2
20-25% decrease	3	9.7	83.9
25-30% decrease	1	3.2	87.1
30-35% decrease	2	6.5	93.5
35-40% decrease	2	6.5	100

Questions 29 and 30 were presented in an attempt to ascertain if there is a tendency on the part of subcontractors to avoid long-term projects or programs. The overwhelming response from the respondents was that most companies prefer a long-term program with a stable, long-term commitment, especially in the present environment of a prolonged recession and an unstable market. As a result 93.5% of the respondents disagreed with the notion that their companies would not compete for a contract based on the premise that it would entail a long production run with an anticipation of a low profit margin. Most of the companies involved would accept a lower profit if a stable, long term commitment could be realized. Along the same lines,

Question 30 asked if the firm involved would choose not to compete for a contract with a long production run because of being locked into a long-term project. Of the companies interviewed, 93.5% disagreed, on the basis of preferring a long-term project with the resultant stabilizing effect on production, the workforce, and the factories workload. The majority of the contractors responding to these two questions felt that workload leveling, and smoothing out of the peaks and valleys of production volume would be an incentive to engaging in a long-term project.

The question of constraints to an increased surge capacity were addressed in questions 31 and 32. Question 31 asked whether material would be a major or minor constraint to an emergency production surge, and question 32 addressed the issue from the direct labor aspect. Of the firms responding, 83.9% felt that material would be a major constraint, and 90.3% felt that direct labor would be a minor constraint. The crux of the matter seems to be the increased lead times now being encountered for a majority of the raw materials required in aircraft production. Certain raw materials such as titanium, have lead times approaching a year, and some forgings and special tooling require 10-12 months lead time. These time frames place a tremendous burden on the production and assembly processes involved in the aircraft industry. As a result, the volume of raw materials on hand and their availability would pose a very serious problem in increasing a production line rate. On the other hand, 90.3% felt that direct labor would be a minor constraint and would not pose a major threat to stopping an increase in production. The high rate of unemployment is the major factor. The lack of experience of the workforce at large, however, was mentioned as a significant factor in the overall labor picture.

As mentioned previously in Chapter II, the ability to buy in advance and in EOQ quantities, is one of the major advantages related to the expanded use of MYP. Question 33 was presented in an attempt to quantify the amount of material which, in the opinions of the respondents, could be purchased as advanced buys. The question provided four responses, which established specific percentages which they felt could apply. The percentages were; a) 10-25%, b) 25-50%, c) 50-75%, and d) 75-90%. All of the respondents felt that a percentage of the materials involved could be bought in advance, but that the level of advanced procurement would be based on the funding provided by the government and the prime. The results of question 33 are presented in Table IX.

TABLE IX

Percentage of Material Purchased as Advanced Buys

Response	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
10-25%	16	51.6	51.6
25-50%	10	32.3	83.9
50-75%	4	12.9	96.8
75-90%	1	3.2	100

The last two questions of the survey were inserted in an attempt to determine the contractors willingness to invest in productivity enhancements and to raise the technology level of his production facilities to the state of the art. The results were as follows: Question 34, 87.1% agreed that they would be willing to invest in productivity enhancements and equipment, and 9.7% had no opinion. To

question 35, 74.2% agreed that their firm would raise its technology level to the state of the art and 16.1% said, they would not, primarily because they thought they were already there.

D. SUMMARY

The main focus of this chapter has been to reflect the major opinions of subcontractors regarding the impact of MYP on their firm. This was accomplished by examining the responses made by subcontractors in the aircraft production industry to a questionnaire prepared by Air Force Captains Steve Berjans and Larry Elbroch, and modified by the author. The questionnaire sought to express subcontractor opinion on various aspects of MYP and its potential impact. The responses to each of the survey questions, where applicable, were summarized in tables or in narrative form.

IV. PRINCIPAL FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A. FINDINGS AND CONCLUSIONS

The objective of this study was to contribute accurate data reflecting various subcontractors opinions on the impact of multi-year procurement. The principal findings and conclusions were derived from opinions received during personal interviews and the questionnaire response data discussed in the previous chapter:

1. In general, the subcontractors interviewed, perceived a fall-out of the benefits accrued by the prime in a multi-year contracting environment. All of the contractors who responded to the survey expressed the opinion that their firm would realize some form of benefit from the implementation of MYP at the prime contractor level. The main points of disagreement were: how much would actually flow down to the contractor, which areas would be affected the most, and the impact on overall cost reduction. To date, most of the contractors have felt a reluctance on the part of the primes to completely relax and let MYP take its course. There seems to be a wait and see attitude on the part of the primes in relation to Congressional action on recent DOD initiatives in the MYP arena, (i.e.: H.R. 745, the FY 83 DOD Authorizations Bill, and Congressional committee action on DOD's FY 84 MYP candidate list).
2. The area of greatest potential savings was felt to be in the purchase of EOQ quantities of material. Across the board, each contractor expressed the

opinion that the majority of savings would be realized in the purchase of material in advance, at now year prices, and in large quantities. The degree to which this would be a factor, is contingent upon the level of funding allotted to the front-end of the contract for advanced procurement of long lead items and raw materials. The key is to have the primes' investment covered by either the cancellation ceiling or funded in the termination liability.

3. MYP is regarded as a partial solution to slowing the erosion of the defense industrial base by both industry and DOD. This will be accomplished primarily by encouraging both primes and subcontractors to, a) invest in state of the art equipment, b) expand their business base, and c) encourage companies to enter the defense marketplace for the first time. These three results of the expanded application of MYP were voiced unanimously by both government and industry alike.

4. In nearly all instances, contractors involved in the defense industry endorse MYP concepts primarily because of the potential cost savings, and the increased stability achieved in long-term commitments. In order to substantiate the cost savings possible under MYP as opposed to annual contracting methods, one of the primes involved in the study requested three proposals from its subcontractors. One proposal based on annual contracting procedures, one proposal based on MYP procedures, and one proposal based on the most economical and efficient production rate and purchasing possible. This procedure was endorsed by all of the subcontractors involved primarily because the savings were readily identified, the overall benefits of contracting for

more than one year were established up front, and the prime now had firm pricing data upon which to base its proposal. This approach thus enhances the entire program by avoiding price fluctuations on critical materials, and stabilizing purchasing, scheduling, and deliveries of raw materials.

5. The laws and regulations regarding the use of MYP must be changed. This opinion was voiced by every contractor interviewed, and most specified the following areas in which change is required immediately: a) The cancellation ceiling should be increased to realistic levels for major systems acquisitions. This has been alleviated to some extent by the passage of the DOD FY 82 Defense Appropriations Act, which raised the ceiling to 100 million and requires Congressional approval on a case by case basis for any contractor request exceeding that amount. b) Include recurring costs in the cancellation ceiling. c) Increase the level of progress payments authorized. These last two points were regarded as crucial and must be accompanied by the increased cancellation ceiling.
6. A majority of the contractors felt that, as a result of implementation of MYP, the surge capacity would be enhanced, but would depend largely on the amount of advnced buys funded and the lead times involved. One contractor specified that the surge capacity would increase most significantly in the second and third years. Additionally, the time it would take to surge from a peacetime production rate to a wartime production rate would be greatly reduced. One California firm stated that a 50% decrease in the time required to gear up to top capacity would result. Most of the respondents felt that a reduction in the time

required to reach wartime production would be decreased 5 to 15 percent at least.

7. The most significant finding was not even addressed in the survey itself but was voiced in one form or another by every firm interviewed. This was the issue of overall awareness of the multi-year funding and contracting process in general. Most buyers at the subcontractor level are not familiar with the fundamental requirements and procedures involved in executing a multi-year contract. One executive stated that he was the only one in the company who knew enough about MYP to negotiate a contract with the prime. This had placed a tremendous administrative burden on himself and the company. Most contractors believed that the primary reasons for this situation were: a) the short time in which MYP has been in existence and been utilized to date, b) a lack of commitment by DOD to MYP procedures, c) a lack of formal training in MYP procedures by both DOD and industry, and d) a wait and see attitude on the part of industry concerning the future of MYP. Several respondents felt that they perceived an atmosphere of hesitation and serious misgivings on the part of Congress as the root cause of the problem. In any case, most of the contractors felt that too much had happened, too fast, in regard to the implementation of MYP. Industry is waiting and watching for a change in the attitude of DOD and Congress pertaining to MYP. Until this occurs, the defense contractor will not make a major investment in making MYP work.

B. RECOMMENDATIONS

1. DOD should review the goals and objectives of MYP, and determine what priority it should have in relation to other DOD policies. DOD needs to give industry and Congress, a clear signal as to where it stands on the future use of MYP. If the priority is present, then a formal training program should be initiated by the Office of The Secretary of Defense (OSD). The participation of OSD is critical, because the apparent interest by DOD leadership makes the importance of such a move a clear signal to both industry and Congress. Without this sign of a commitment from DOD, the wait and see attitude on the part of industry will continue, and Congressional reluctance and hesitation will deepen.
2. DOD should lend its support and influence to legislation concerning MYP. The establishment of a body of law specifically addressing MYP is a basic requirement to its success and growth. This would create a formal, concrete foundation upon which the industrial marketplace could depend. The resultant stability would enhance the transition of MYP into the forefront of the DOD acquisition process.
3. It is recommended that further research be conducted in regard to other industries, such as shipbuilding, to determine the impact of MYP on the subcontractors involved. It is clear that the aircraft industry is receiving benefits from the implementation of MYP, but further study is required of other industries and different levels of the subcontractor community to ascertain the extent to which MYP has affected their business. Much more research is needed at the lower levels, which would include the smaller firms which supply the first and second tier subcontractors.

4. Although the survey did not directly address this issue, the author recommends that a link be created between the MYP acquisition process and the Planning, Programing and Budgeting System (PPBS), currently utilized in budget formulation. This would add stability by avoiding some of the last minute slashing and infighting now the case in finalizing the President's budget submission to Congress. There must be an interface between what is contained in the Five Year Defense Plan (FYDP), the President's budget, the DOD Authorizations bill, and what the Army, Navy, or Air Force actually want to buy and when they want to have it operational.
5. DOD should pursue the approval of legislation now in committee, H.R. 745, which establishes new thresholds and realistic limitations on the use of MYP. Specifically, the following areas should be considered as minimum: a) permanently raise the limit on the cancellation ceiling, b) raise the level of progress payments, c) include recurring costs in the cancellation ceiling, d) incorporate a special profit factor for MYP contracts to recognize the increased risks involved in some cases. These changes should be aimed at helping some of the smaller subcontractors who are continually feeling the pinch of inflation and the high carrying costs of inventory and assets. These smaller companies must borrow at a higher rate of interest than prime contractors due to their less preferential financial position. They have fewer financial resources available and must turn over their assets more frequently and reduce debt ratios to avoid the high cost of capital. If the defense industrial base is to be rebuilt and strengthened, the "little guys" will have to be

considered, and assisted by conscious effort and active legislation.

APPENDIX A
SURVEY QUESTIONNAIRE

A. SECTION I

This section is primarily concerned with your background and experience, and your firms history in dealing with a prime involved in a defense contract.

1. Which answer below best describes your area of responibility in the firm

   a. Materials Manager
   b. Financial Management
   c. Contracts/Purchasing
   d. Engineering/R & D
   e. Program Manager
   f. Marketing

2. Which choice below best describes your position within the firm?

   a. Executive
   b. Middle Management
   c. Supervisor

3. For how many years have you been in your present position?

   a. less than 1 year
   b. 1 to 4 years
   c. 5 to 8 years
   d. 9 to 12 years
   e. 13 to 17 years
   f. 18 to 25 years
   g. over 25 years

4. How many years have you been employed by your firm?

a. less than 5 years
b. 5 to 10 years
c. 10 to 15 years
d. 15 to 20 years
e. 20 to 25 years
f. over 25 years

5. Has your firm ever dealt with a prime contractor on a major defense contract before?

a. yes
b. no

6. If so, for how many years has your firm acted in this capacity?

a. less than 5 years
b. 5 to 10 years
c. 10 to 15 years
d. over 15 years

7. What percentage of your firms business is government or DOD related?

a. less than 10%
b. 10 to 25%
c. 25 to 50%
d. 50 to 75%
e. 75 to 100%

8. How many years have you personnally been involved in the defense industry or held a position in a firm dealing with the defense industry?

a. less than 5 years
b. 5 to 10 years
c. 10 to 15 years
d. 15 to 20 years
e. 20 to 25 years
f. over 25 years

9. In your current position, which of the following activities consumes the most time?

   a. Supervising
   b. Planning
   c. Meetings with Government Reps.
   d. Meetings with Prime Contractor Reps.
   e. Budgeting

10. Has your firm ever dealt with a Prime involved in a multi-year contract before?

    a. yes b. no

11. Have you ever dealt with a Prime involved in a multi-year contract before?

    a. yes b. no

B. SECTION II

The following questions relate to the conceptual benefits related to multi-year procurement, and their impact on your firm. Please select the response that best describes your firms experience in this area. All of the questions are based on the following premise: Implementation of multi-year procurement at the prime contractor level will have the following impact on my firm:

12. Will reduce average unit cost over the life of a program.

    a. Disagree
    b. No opinion
    c. Agree

13. Will increase standardization.

    a. Disagree
    b. No opinion
    c. Agree

14. Will reduce contract administration costs.

    a. Disagree
    b. No opinion
    c. Agree

15. Will result in reduced labor costs.

    a. Disagree
    b. No opinion
    c. Agree

16. Will increase productivity.

    a. Disagree
    b. No opinion
    c. Agree

17. Will stabilize your workforce.

a. Disagree
b. No opinion
c. Agree

18. Will stabilize your production manpower loading requirements.

a. Disagree
b. No opinion
c. Agree

19. Will increase modernization of production capability and capacity.

a. Disagree
b. No opinion
c. Agree

20. Will result in my firm competing for more defense related business.

a. Disagree
b. No opinion
c. Agree

21. Will increase the surge capability of production during an emergency situation.

a. Disagree
b. No opinion
c. Agree

C. SECTION III

In this section, you are asked to compare the impact of multi-year contracting to annual contracting. All the questions will be based on the situations described below.

Situation I: Your firm is a subcontractor to a Prime engaged in a long term production program with the Air Force/Navy. The particular service involved estimates another eight years of production life. You anticipate that annual contracting will be used for the remaining production years.

Situation II: The same situation as in I exists, except that the Air Force/Navy has offered the Prime a multi-year contract with the following provisions; a five year contract, Air Force/Navy will reimburse the Prime for materials purchased for use up to two years in the future, the cancellation ceiling has provisions to cover non-recurring costs, and the contract awarded is FPI.

The responses below represent percentage changes for each type of cost involved. Based on the situations presented above please estimate the cost impact that would result in comparing Situation II (MYP) to Situation I (annual buy).

22. Direct labor cost per unit produced?

a. Greater than 30% increase.
b. 20 to 30% increase
c. 5 to 15% increase
d. No change
e. 5 to 15% decrease
f. 20 to 30% decrease
g. Greater than 30% decrease

23. Manufacturing overhead cost per unit?

a. Greater than 30% increase
b. 20 to 30% increase
c. 5 to 15% increase
d. No change
e. 5 to 15% decrease
f. 20 to 30% decrease
g. Greater than 30% decrease

24. Contract administration costs?

a. Greater than 30% increase
b. 20 to 30% increase
c. 5 to 15% increase
d. No change
e. 5 to 15% decrease
f. 20 to 30% decrease
g. Greater than 30% decrease

25. Material and assembly cost per unit?

a. Greater than 30% increase
b. 20 to 30% increase
c. 5 to 15% increase
d. No change
e. 5 to 15% decrease
f. 20 to 30% decrease
g. Greater than 30% decrease

26. Set up and production line costs?

a. Greater than 30% increase
b. 20 to 30% increase
c. 5 to 15% increase
d. No change
e. 5 to 15% decrease
f. 20 to 30% decrease
g. Greater than 30% decrease

27. Increased surge capacity?

a. Greater than 30% increase
b. 20 to 30% increase
c. 5 to 15% increase
d. No change
e. 5 to 15% decrease
f. 20 to 30 decrease
g. Greater than 30% decrease

28. In comparing Situation II to Situation I, the time it would take to surge from a peacetime to a wartime production rate would be decreased?

a. 10 to 15%
b. 15 to 20%
c. 20 to 25%
d. 25 to 30%
e. 30 to 35%
f. 35 to 40%

29. Your firm would not compete for a subcontract involving a long production run because it anticipates a low profit margin.

a. Disagree
b. Agree
c. No opinion

30. Your firm would choose not to compete for a subcontract involving a long production run because of being locked into a long term project?

a. Disagree
b. Agree
c. No opinion

31. How much of a constraint would material be in an emergency production surge?

a. A minor constraint
b. No factor
c. A major constraint

32. How much of a constraint would direct labor be in an emergency production surge?

a. A minor constraint
b. No factor
c. A major constraint

33. What percentage of material could be purchased as advanced buys?

a. 10 to 25%
b. 25 to 50%
c. 50 to 75%
d. 75 to 90%

34. Your firms willingness to invest in productivity enhancements would increase.

a. Disagree
b. No opinion
c. Agree

35. Your firm would raise the techology level of its production facilities to the state of the art.

a. Disagree
b. No opinion
c. Agree

APPENDIX B
COMPANIES SURVEYED

General Electric Company
Armament Systems Department
Lakeside Avenue
Burlington, VT. 05401

National Waterlift Pneumo Corporation
2220 Palmer Avenue
Kalamazoo, MI. 49001

Menasco Manufacturing Company
Texas Division
Box 7656 Sylvania Sta.
Fort Worth, TX. 76111

Sundstrand Aviation
Mechanical Division
Sundstrand Corporation
4747 Harrison Avenue
Rockford, IL. 61101

Airesearch Manufacturing Company
Division of the Garrett Corporation
2525 West 190th St.
Torrance, CA. 90509

Hamilton Standard Division
United Technologies
Bradley Field
Windsor Locks, CT. 06096

Northrop Corporation
Precision Products Division
100 Morse St.
Norwood, MA. 02062

Brunswick Corporation
150 Johnston Rd.
Marion, VA. 24354

Westinghouse Electric Corporation
P.O. Box 989
Lima, OH. 45802

Lear Siegler, Inc.
17600 Broadway
Maple Heights, OH. 44137

Delco Electronics
General Motors Corporation
6767 Hollister Ave.
Goleta, CA. 93017

Kaiser Aerospace and Electric
2701 Orchard Parkway
San Jose, CA. 95131

The Magnavox Company
Communications Products Operation
2131 South Coliseum Blvd.
Fort Wayne, IN. 46803

Novatronics, Inc.
P.O. Box 878
500 S.W. 12th St.
Pompano Beach, FLA. 33063

Simmonds Precision
Instrument Systems Division
Panton Rd.
Vergennes, VT. 05491

Goodyear Aerospace Corporation
Aircraft Wheel & Brake Division
Department 955, Plant C
1210 Massillon Rd.
Akron, OH. 44315

Aerospace Avionics, Inc.
Airport International Place
110 Wilbur Place
Bohemia, NY. 11716

Systron Donner
Inertial Division
2700 Systron Dr.
Concord, CA. 94518

Sargent-Fletcher Company
9400 E. Flair Dr.
El Monte, CA. 91731

Rosemount Inc.
12001 N. W. 78th St.
Eden Prairie, MN. 55344

Arkwin
686 Main St.
Westbury, L.I., NY. 11590

J. C. Carter Company
617 W. 17th St.
Costa Mesa, CA. 92627

Sargent Industries
2533 E. 56th St.
Huntington Park, CA. 90255

Arrowhead
4411 Katella Ave.
Los Alamitos, CA. 90720

Garret Turbine Engine Company
111 S. 34th St.
Phoenix, AZ. 85010

Cleveland Pneumatic Company
3781 E. 77th St.
Cleveland, OH. 44105

Borg Warner
7500 Tyrone Ave.
Van Nuys, CA. 91409

Aircraft Porous Media Inc.
6301 49th St.
North Pinellas Park, FLA. 33565

Kelsy Hayes Company
P.O. Box 1288
Springfield, OH. 45501

Bendix Aircraft
Brake & Strut Division
3520 W. Westmoor St.
South Bend, IN. 46624

East-West Industries
22 Central Dr.
Farmingdale, NY. 11735

AMI Industries Inc.
Aircraft Mechanics Division
P.O. Box 370
Colorado Springs, CO. 80901

Rockwell International
Collins Telecommunications Products Division
855-35th St. NE
Cedar Rapids, IA. 52498

General Electric Corporation
50 Fordam Road
Wilmington, MA. 01887

Lear Siegler
32 Fairfield Place
West Caldwell, NJ. 07006

Sperry Flight Systems Division
21111 N. 19th Ave.
Phoenix, AZ. 85027

Metal Bellows Corporation
20960 Knapp St.
Chatsworth, CA. 91311

Bendix Air Transport Avionics Division
2150 N. 62nd St.
P.O. Box 9414
Fort Lauderdale, FLA. 33310

Bendix Corporation
Rt. 46
Teterboro, NJ. 07608

Ozone Industries Inc.
101-32 101st St.
Ozone Park, NY. 11416

Teledyne Hydropower
10-12 Pine Court
New Rochelle, NY. 10801

TEK Precision Company Ltd.
205 W. Industry Court
Deer Park, NY. 11729

General Mechatronics
55 & 60 Millbar Blvd.
Farmingdale, NY. 11735

Teleflex Inc.
Church Rd.
North Wales, PA. 19454

Barber-Colemen Company
1354 Clifford Ave.
Rockford, IL. 61111

Crane Company
3000 Winona Ave.
Burbank, CA. 91504

APPENDIX C
COMMON DEFINITIONS

1. Fiscal Year Funding - Total funding provided from one October to the next, to cover requirements for all program years.

2. Program Year Funding - Sum of all advanced procurement funding and instant year TOA needed to produce final product deliveries.

3. Multi-Year Advanced Procurement Funding - Funding required to cover long lead items plus economic ordering quantities.

4. Termination Liability - Obligations resulting from committments made by contractors and subcontractors that will be incurred should termination occur.

5. Cancellation Ceiling - Unfunded Termination Liability.

6. Full Funding - Full coverage to the termination liability curve.

7. Total Obligation Authority (TOA) - Total funding authority for a given fiscal year (advanced procurement + instant year end item).

8. Advance Procurement - An exception allowed by DOD Directive 7200.4 to Annual Funding which allows procurement of long leadtime components in advance of the fiscal year in which the end item is procured. (Currently made only for reasons of leadtime and usually limited to one year).

9. Buy-in - Acceptance by a contractor of an abnormally low profit factor on an initial award to ensure a win. (With aspirations of more reasonable profit factors on subsequent follow-on procurements of the same system).

10. Cancellation - Applies solely to multi-year contracts and is not synonomous with termination. It is the right of the Government to discontinue a multi-year contract at the end of a fiscal year and for all subsequent fiscal years.

11. Expenditure Funding - Ordering a specific requirement quantity at the beginning of a multi-year contract and funding contractor obligations on a yearly basis.

12. Incremental Funding - Funds are not available at time of contract award to cover the total estimated cost to complete delivery in a finished and militarily usable form.

13. Multi-Year Contract - A contract utilizing multi-year procurement procedures. Currently limited by the Defense Acquisition Regulation (DAR).

14. Multi-year Funding - Congressional authorizations and appropriations which cover more than one fiscal year.

15. Multi-year Procurement - A generic term which describes procedures for acquiring needed items over several years through one contract. The intent is to lower costs through economies of scale.

16. Non-recurring Costs - Production costs which are incurred on a one time basis and amortized over the period of the multi-year contract.

17. Recurring Costs - Production costs which enter into the product such as material and labor.

18. Level Unit Price - The DAR requirement for the price of each unit produced under a multi-year contract to be the same, (exceptions are allowed for design/ specifications changes or for economic price adjustments made pursuant to a clause in the contract).

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